

REPORT DOCUMENTATION PAGE

Form Approved OMB NO. 0704-0188

The public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA, 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.

1. REPORT DATE (DD-MM-YYYY) 02-11-2007	2. REPORT TYPE Final Report	3. DATES COVERED (From - To) 18-Apr-2007 - 17-Oct-2007		
4. TITLE AND SUBTITLE IPDO-2007- Inverse Problems, Design and Optimization Symposium		5a. CONTRACT NUMBER W911NF-07-1-0230		
		5b. GRANT NUMBER		
		5c. PROGRAM ELEMENT NUMBER 611102		
6. AUTHORS George S. Dulikravich		5d. PROJECT NUMBER		
		5e. TASK NUMBER		
		5f. WORK UNIT NUMBER		
7. PERFORMING ORGANIZATION NAMES AND ADDRESSES Florida International University Division of Sponsored Research 11200 SW 8th Street- MARC 430 Miami, FL		8. PERFORMING ORGANIZATION REPORT NUMBER 33199 -		
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. Army Research Office P.O. Box 12211 Research Triangle Park, NC 27709-2211		10. SPONSOR/MONITOR'S ACRONYM(S) ARO		
		11. SPONSOR/MONITOR'S REPORT NUMBER(S) 51426-MS-CF.1		
12. DISTRIBUTION AVAILABILITY STATEMENT Approved for Public Release; Distribution Unlimited				
13. SUPPLEMENTARY NOTES The views, opinions and/or findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy or decision, unless so designated by other documentation.				
14. ABSTRACT IPDO-2007 Symposium's main objectives were to bring the three communities of researchers (inverse problems experts, design theory experts, and optimization experts) together and provide a common forum for presenting different applications, problems, and solution strategy concepts. These three areas of research covered by the IPDO Symposium have a number of things in common. For example, many methodologies for solving inverse problems employ optimization algorithms. However, there are no optimization algorithms that employ methods of inverse design that could substantially reduce the number of time-consuming analysis required by the typical evolutionary optimization algorithms. Similarly, design theory is not well				
15. SUBJECT TERMS Inverse problems; design; optimization				
16. SECURITY CLASSIFICATION OF: a. REPORT U		17. LIMITATION OF ABSTRACT b. ABSTRACT U c. THIS PAGE U SAR	15. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON George Dulikravich
				19b. TELEPHONE NUMBER 305-348-7016

Report Title

IPDO-2007 - INVERSE PROBLEMS, DESIGN AND OPTIMIZATION SYMPOSIUM

ABSTRACT

IPDO-2007 Symposium's main objectives were to bring the three communities of researchers (inverse problems experts, design theory experts, and optimization experts) together and provide a common forum for presenting different applications, problems, and solution strategy concepts. These three areas of research covered by the IPDO Symposium have a number of things in common. For example, many methodologies for solving inverse problems employ optimization algorithms. However, there are no optimization algorithms that employ methods of inverse design that could substantially reduce the number of time-consuming analysis required by the typical evolutionary optimization algorithms. Similarly, design theory is not well known in the optimization community where formulation of the appropriate multiple objectives and system-of-systems design formulations are often performed using intuition and personal experience. The IPDO-2007 Symposium thus offered a unique international forum that was expected to provide an excellent basis for cross-fertilization of ideas and creation of new synergistic approaches and methodologies that will combine the three fields of research so that more general, robust, accurate and computationally economical design methods are created for multi-disciplinary applications. Contributions dealing with practical applications were encouraged, such as in petrochemistry, aeronautics, bio-medicine, sensing of pollutants, materials processing, non-destructive evaluation, material property determination, etc.

List of papers submitted or published that acknowledge ARO support during this reporting period. List the papers, including journal references, in the following categories:

(a) Papers published in peer-reviewed journals (N/A for none)

Number of Papers published in peer-reviewed journals: 0.00

(b) Papers published in non-peer-reviewed journals or in conference proceedings (N/A for none)

Number of Papers published in non peer-reviewed journals: 0.00

(c) Presentations

Number of Presentations: 0.00

Non Peer-Reviewed Conference Proceeding publications (other than abstracts):

Number of Non Peer-Reviewed Conference Proceeding publications (other than abstracts): 0

Peer-Reviewed Conference Proceeding publications (other than abstracts):

1. Approximation of the Likelihood Function in the Bayesian Technique for the Solution of Inverse Problems (with Orlande, H.R.B. and Colaco, M.J.), International Symposium on Inverse Problems, Design and Optimization (IPDO-2007), (eds.: Dulikravich, G.S., Orlande, H.R.B., Tanaka, M. and Colaco, M.J.), Miami Beach, FL, April 16-18, 2007.
2. Multiobjective Nonlinear Shape Optimization of Stent Based on Evolution Principles (with Amicchiarico, W.), International Symposium on Inverse Problems, Design and Optimization (IPDO-2007), (eds.: Dulikravich, G.S., Orlande, H.R.B., Tanaka, M. and Colaco, M.J.), Miami Beach, FL, April 16-18, 2007.
3. A Comparison of Two Methods for Fitting High Dimensional Response Surfaces (with Colaco, M. J. and Sahoo, D.), International Symposium on Inverse Problems, Design and Optimization (IPDO-2007), (eds.: Dulikravich, G.S., Orlande, H.R.B., Tanaka, M. and Colaco, M.J.), Miami Beach, FL, April 16-18, 2007.
4. Inverse Approaches to Drying of Sliced Foods (with Kanevce, G. H., Kanevce, Lj. P., and Mitrevski, V. B.), International Symposium on Inverse Problems, Design and Optimization (IPDO-2007), (eds.: Dulikravich, G.S., Orlande, H.R.B., Tanaka, M. and Colaco, M.J.), Miami Beach, FL, April 16-18, 2007.
5. Inverse Approaches in Improvement of Air Pollution Plume Dispersion Models for Regulatory Applications (with Kanevce, G. H., Kanevce, Lj. P., and Andreevski, I. B.), International Symposium on Inverse Problems, Design and Optimization (IPDO-2007), (eds.: Dulikravich, G.S., Orlande, H.R.B., Tanaka, M. and Colaco, M.J.), Miami Beach, FL, April 16-18, 2007.

(d) Manuscripts

1. Approximation of the Likelihood Function in the Bayesian Technique for the Solution of Inverse Problems (with Orlande, H.R.B. and Colaco, M.J.), International Symposium on Inverse Problems, Design and Optimization (IPDO-2007), (eds.: Dulikravich, G.S., Orlande, H.R.B., Tanaka, M. and Colaco, M.J.), Miami Beach, FL, April 16-18, 2007.
2. Multiobjective Nonlinear Shape Optimization of Stent Based on Evolution Principles (with Annicchiarico, W.), International Symposium on Inverse Problems, Design and Optimization (IPDO-2007), (eds.: Dulikravich, G.S., Orlande, H.R.B., Tanaka, M. and Colaco, M.J.), Miami Beach, FL, April 16-18, 2007.
3. A Comparison of Two Methods for Fitting High Dimensional Response Surfaces (with Colaco, M. J. and Sahoo, D.), International Symposium on Inverse Problems, Design and Optimization (IPDO-2007), (eds.: Dulikravich, G.S., Orlande, H.R.B., Tanaka, M. and Colaco, M.J.), Miami Beach, FL, April 16-18, 2007.

Number of Manuscripts: 3.00

Number of Inventions:

Graduate Students

<u>NAME</u>	<u>PERCENT SUPPORTED</u>
-------------	--------------------------

FTE Equivalent:

Total Number:

Names of Post Doctorates

<u>NAME</u>	<u>PERCENT SUPPORTED</u>
-------------	--------------------------

FTE Equivalent:

Total Number:

Names of Faculty Supported

<u>NAME</u>	<u>PERCENT SUPPORTED</u>
-------------	--------------------------

FTE Equivalent:

Total Number:

Names of Under Graduate students supported

<u>NAME</u>	<u>PERCENT SUPPORTED</u>
-------------	--------------------------

FTE Equivalent:

Total Number:

Student Metrics

This section only applies to graduating undergraduates supported by this agreement in this reporting period

The number of undergraduates funded by this agreement who graduated during this period: 0.00

The number of undergraduates funded by this agreement who graduated during this period with a degree in science, mathematics, engineering, or technology fields:..... 0.00

The number of undergraduates funded by your agreement who graduated during this period and will continue to pursue a graduate or Ph.D. degree in science, mathematics, engineering, or technology fields:..... 0.00

Number of graduating undergraduates who achieved a 3.5 GPA to 4.0 (4.0 max scale):..... 0.00

Number of graduating undergraduates funded by a DoD funded Center of Excellence grant for Education, Research and Engineering:..... 0.00

The number of undergraduates funded by your agreement who graduated during this period and intend to work for the Department of Defense 0.00

The number of undergraduates funded by your agreement who graduated during this period and will receive scholarships or fellowships for further studies in science, mathematics, engineering or technology fields: 0.00

Names of Personnel receiving masters degrees

NAME

Total Number:

Names of personnel receiving PHDs

NAME

Total Number:

Names of other research staff

NAME

PERCENT SUPPORTED

FTE Equivalent:

Total Number:

Sub Contractors (DD882)

Inventions (DD882)

**FINAL REPORT
(10/01/06 – 08/31/07)**

**IPDO-2007 - INVERSE PROBLEMS, DESIGN AND
OPTIMIZATION SYMPOSIUM**

Professor George S. Dulikravich, Ph.D., FAAM, FASME
Chairperson, Department of Mechanical and Materials Engineering
Director, Multidisciplinary Analysis, Inverse Design, Robust Optimization & Control (MAIDROC) Lab.
Florida International University
College of Engineering and Computing, Room EC 3474
10555 West Flagler Street, Miami, Florida 33174
(305) 348-7016 (office phone)
(954) 554-0368 (cell)
(305) 348-6007 (FAX)
dulikrav@fiu.edu (E-mail)
<http://www.eng.fiu.edu/mme/>
<http://maidroc.fiu.edu>
<http://www.tandf.co.uk/journals/titles/17415977.asp>
<http://www.ipdos.org/ipdo2007>

1. Foreword

Inverse problems, design theories and multi-objective constrained optimization strategies are three areas of advanced research that are rapidly becoming of common use by practicing engineers and designers. Consequently, there is an upsurge in the number of separate scientific meetings in each of these three general areas. The main objective of the IPDO-2007 - INVERSE PROBLEMS, DESIGN AND OPTIMIZATION SYMPOSIUM held April 16-18, 2007 in Miami Beach, Florida was to bring together the three communities of researchers (inverse problems, design theory and evolutionary optimization experts) and provide a common forum for presenting different applications, problems and solution concepts. IPDO Symposium is a sequence of international technical meetings that was preceded by the following meetings:

ICIDES-I organized by G.S. Dulikravich (University of Texas at Austin, 1984)
ICIDES-II organized by G.S. Dulikravich (Pennsylvania State University, 1987)
ICIDES-III organized by G.S. Dulikravich (Washington, DC, 1991)

The IPDO-2007 Symposium is the second in the IPDO sequence. The first IPDO Symposium was IPDO-2004 organized by G.S. Dulikravich, H.R.B. Orlande and M.J. Colaco and held in Rio de Janeiro in March of 2004.

2. Table of Contents

	Page
1. Foreword	1
2. Table of Contents	1
3. List of Appendices, Illustrations and Tables	2
4. Statement of the problem studied	2
5. Summary of the most important results	5
6. Listing of all publications and technical reports supported under this grant or contract	6
7. List of all participating scientific personnel showing any advanced degrees earned by them while employed on the project	12
8. Report of inventions (by title only)	12
9. Bibliography	12
10. Appendices	13

3. List of Appendices, Illustrations and Tables

Fig. 1 A view from a balcony of Newport Beachside Resort Hotel, Miami Beach, Florida	3
Fig. 2 Hotel staff involved with IPDO-2007	13
Fig. 3 FIU ASME Student Chapter staff	13
Fig. 4 Opening of IPDO-2007 Symposium	13
Fig. 5 Technical paper presentations	13
Fig. 6 IPDO-2007 organizers at the banquet	13
Fig. 7 IPDO-2007 banquet and awards	13
Table 1. Registration fees and rates	2
Table 2. Invited speakers stipends partially financed by this grant	3
Table 3. IPDO-2007 SYMPOSIUM PROGRAM	5
Table 4. IPDO-2007 PAPERS: CODE NUMBERS, TITLES AND PAGES IN THE PROCEEDINGS	7
Table 5. IPDO-2007 PAPERS: CODE NUMBERS AND AUTHORS	9
Table 6. IPDO-2007 AUTHORS AND PAPERS BY COUNTRY	12

4. Statement of the Problem Studied

IPDO Symposium's main objectives were to bring the three communities of researchers (inverse problems experts, design theory experts, and optimization experts) together and provide a common forum for presenting different applications, problems, and solution strategy concepts. These three areas of research covered by the IPDO Symposium have a number of things in common. For example, many methodologies for solving inverse problems employ optimization algorithms. However, there are no optimization algorithms that employ methods of inverse design that could substantially reduce the number of time-consuming analysis required by the typical evolutionary optimization algorithms. Similarly, design theory is not well known in the optimization community where formulation of the appropriate multiple objectives and system-of-systems design formulations are often performed using intuition and personal experience. The IPDO-2007 Symposium thus offered a unique international forum that is expected to provide an excellent basis for cross-fertilization of ideas and creation of new synergistic approaches and methodologies that will combine the three fields of research so that more general, robust, accurate and computationally economical design methods are created for multi-disciplinary applications. Contributions dealing with practical applications were encouraged, such as in petrochemistry, aeronautics, astronautics, bio-medicine, transport and sensing of pollutants, materials processing, remote sensing, non-destructive evaluation, material property determination, acceleration of optimization procedures, etc.

5. Summary of the Most Important Results

Location of IPDO-2007: The location for the IPDO-2007 Symposium was Newport Beachside Resort Hotel, 16701 Collins Avenue, Miami Beach, Florida, U.S.A. With a privileged location right on the beach, this hotel has one of the central and most stunning views of the famous North Miami Beach and it is ideal for those who are traveling on business or leisure. When reserving a hotel room, attendees were alerted to mention that it is for the IPDO-2007 so that they can obtain a negotiated reduced rate. Details were made available on the website <http://mcolaco.freeshell.org/ipdo2007/index.htm>

Convention Center: The hotel has three meeting rooms for up to 160 people, including a business center with a computer, FAX, and Xerox copying. For those desiring Internet access, we have negotiated with the hotel to provide wireless Internet access free of charge.

Transportation: For the conference participants, the flight destination shall be either Miami International Airport (MIA) or Fort Lauderdale Airport (FLL). Both airports are served by major airline carriers, with everyday flights from many cities in North America, Central and South America and Europe. Transportation from either of the two airports to the conference hotel on North Miami Beach is available either by bus (approximately \$15 one way) or by taxi (approximately \$40 one way) and it takes 30-45 minutes depending on traffic.

Registration Fees: All participants (including members of the organizing committee and invited speakers) were required to register and pay a registration fee according to the following table.

Table 1. Registration fees and rates

	Until February 1, 2007	After January 31, 2007
Participant	US \$325.00	US \$400.00
Graduate Student (with a proof of their status)	US \$180.00	US \$225.00
Guest (not attending technical sessions)	US \$180.00	US \$225.00

Registration fees were collected by the representatives of the FIU Student Chapter of the American Society of Mechanical Engineers. These funds were used to pay hotel fees (rental of conference rooms, food and drinks for the entire meeting including a reception on Sunday, April 15, 2007 and taxes). The registration fees were also used to pay for bags, T-shirts,

caps, ball pens, printing of the Books of Abstracts, production of CDs with the abstracts, printing of volumes of IPDO-2007 paper proceedings, production of CDs with final papers, payment of travel expenses for several of the invited speakers, payment of PayPal service, and payment of FIU Student ASME chapter staff services.

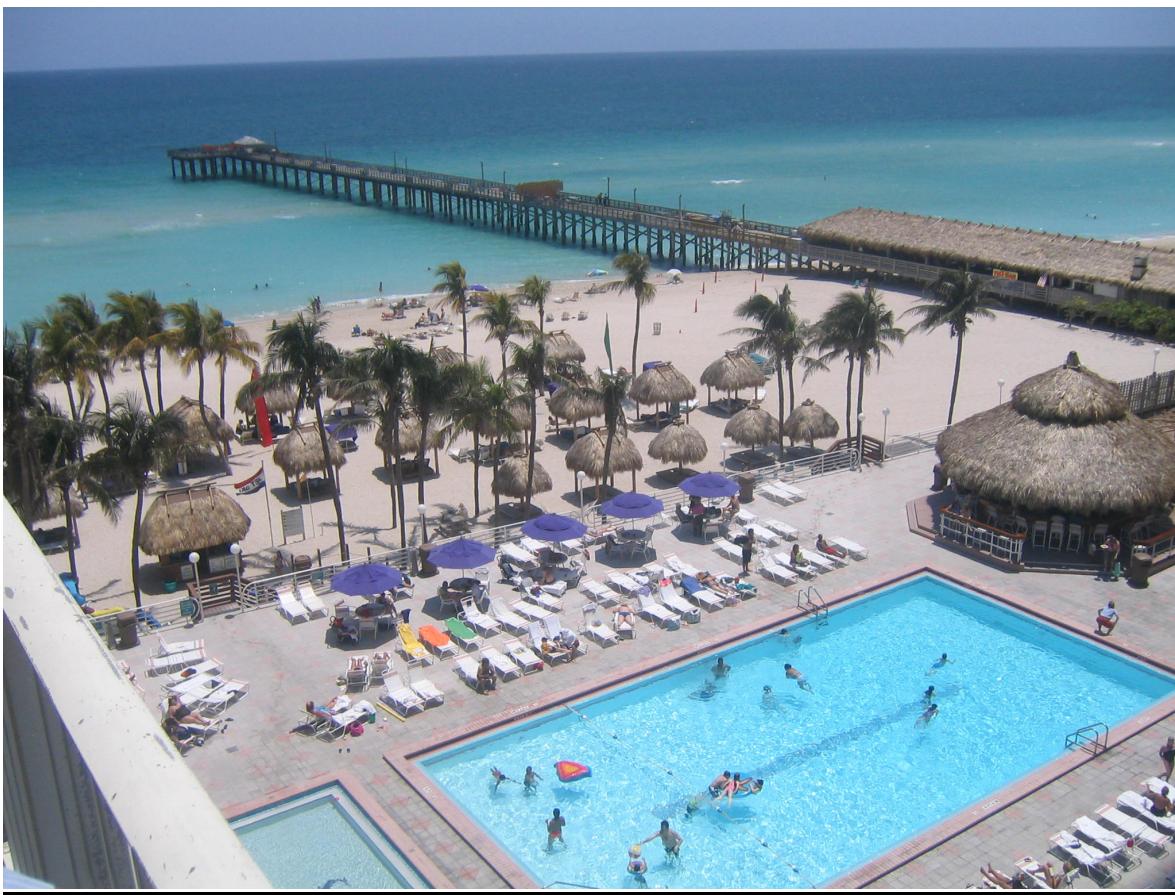


Fig. 1 A view from a balcony of Newport Beachside Resort Hotel, Miami Beach, Florida

5.1 ARMY RESEARCH OFFICE GRANT USE

This grant was for financial co-sponsorship of IPDO-2007 Symposium. Specifically, it was strictly for payment of stipends for several invited speakers as follows:

Table 2. Invited speakers stipends partially financed by this grant

Account charged	Army Research Office grant W911NF-07-1-0230 to Florida International University			
Name of the invited speaker paid	Helmut Sobieczky (Germany)	Nirupam Chakraborty (India)	Alexander Ramm (U.S.A.)	Marcelo Colaco (Brazil)
Amount paid	\$1,000.00	\$1,500.00	\$1,120.00	\$1,380.00
Form of payment	a single check	a single check	a single check	a single check

5.2 ORGANIZING COMMITTEE FOR IPDO-2007

The realization of the IPDO Symposium evolved from the scientific collaboration involving Prof. George S. Dulikravich, from Florida International University, Prof. Helcio R. B. Orlande, from the Federal University of Rio de Janeiro (Brazil), Prof. Masataka Tanaka from Shinshu University, Nagano (Japan), and Prof. Marcelo J. Colaço, from the Military Institute of Engineering (Brazil). They created the organizing committee for the symposium as follows:

CHAIR: Prof. George S. Dulikravich
 CO-CHAIR: Prof. Helcio R. B. Orlande
 CO-CHAIR: Prof. Masataka Tanaka
 SECRETARY: Prof. Marcelo J. Colaço

5.3 INTERNATIONAL SCIENTIFIC COMMITTEE FOR IPDO-2007

The International Scientific Committee was composed of recognized experts in Inverse Problems, Design and Optimization, from the five continents and several countries. The committee supported the symposium mainly through the

evaluation of all submitted contributions. In addition, many members of this committee attended the symposium to present papers and invited/keynote lecturers. The international scientific committee of the IPDO-2007 Symposium is presented below.

Prof. Brian H. Dennis (USA)
Prof. Jay I. Frankel (USA)
Prof. John R. Howell (USA)
Prof. Yvon Jarny (France)
Prof. Jari P. Kaipio (Finland)
Prof. Alain J. Kassab (USA)
Prof. Karl-Jörg Langenberg (Germany)
Prof. William R. B. Lionheart (UK)
Prof. A. Haji-Sheikh (USA)
Prof. Giulio Maier (Italy)
Prof. Guoping Miao (PR China)
Prof. John C. Schotland (USA)
Prof. Antonio J. Silva Neto (Brazil)
Prof. Robert Throne (USA)
Prof. Pavel Trivailo (Australia)
Prof. Keith A. Woodbury (USA)
Prof. Anatoly G. Yagola (Russia)

5.4 SPONSORS AND PROMOTERS OF IPDO-2007

AFOSR/Numerical Mathematics (United States Air Force Office of Scientific Research)

ARO/Materials Division (United States Army Research Office)

Taylor & Francis Publishers (United Kingdom)

ESTECO – modeFRONTIER (Italy)

SIGMA Technology – IOSO Technology Center (Russia)

ASME FIU Student Section (ASME/Florida International University, U.S.A.)

UFRJ (Federal University of Rio de Janeiro, Brazil)

5.5 CALL FOR ABSTRACTS FOR IPDO-2007

Three times during fall/winter of 2006/2007, the following Call for Papers was e-mailed to approximately 10,000 colleagues throughout the world.

International Symposium on
INVERSE PROBLEMS, DESIGN AND OPTIMIZATION (IPDO-2007)

Miami Beach, Florida, U.S.A., April 16-18, 2007.

IPDO Symposium's main objectives are to bring the three communities of researchers (inverse problems experts, design theory experts, and optimization experts) together and provide a common forum for presenting different applications, problems, and solution strategy concepts. These three areas of research to be covered by the IPDO Symposium have a number of things in common. For example, many methodologies for solving inverse problems employ optimization algorithms. But, there are no optimization algorithms that employ methods of inverse design that could potentially substantially reduce the number of time-consuming analysis required by the typical evolutionary optimization algorithms. Similarly, design theory is not well known in the optimization community where formulation of the appropriate multiple objectives and system-of-systems design formulations are often performed using intuition and personal experience. The IPDO Symposium thus offers a unique international forum that is expected to provide an excellent basis for cross-fertilization of ideas and creation of new synergistic approaches and methodologies that will combine the three fields of research so that more general, robust, accurate and computationally economical design methods are created for multi-disciplinary applications.

Organizers:

G.S. Dulikravich (chair), H.R.B. Orlande (co-chair), M. Tanaka (co-chair), M.J. Colaco (secretary)

Sponsors:

AFOSR (United States Air Force Office of Scientific Research)

ARO (United States Army Research Office)

T&F (Taylor & Francis Publishers)

ESTECO (Europe)

Sigma Technology (Russia)

FIU (Florida International University)

UFRJ (Federal University of Rio de Janeiro)

Areas of interest:

The IPDO-2007 Symposium will emphasize a broad range of deterministic, statistical, analytical, computational and experimental approaches, which can be applied to the solution of inverse, design and multi-disciplinary optimization problems. Contributions dealing with theoretical concepts and practical applications are encouraged, such as in petrochemistry, aeronautics, astronautics, bio-medicine, transport and sensing of pollutants, materials design and processing, remote sensing, non-destructive evaluation, material property determination, acceleration of large scale optimization, design theory, etc.

Deadlines:

1 October, 2006 proposals for organizing technical sessions (six papers per session)
 1 November, 2006 deadline for submission of two-page abstracts in .pdf format
 1 December, 2006 informing authors about acceptability of abstracts
 1 February, 2007 deadline for submission of full eight-page papers
 1 March, 2007 deadline for early registration

Abstracts and papers:

Please submit two-page abstracts (including preliminary results, basic figures, formulas, and references) in .pdf format to the following e-mail addresses: IPDO2007@GMAIL.COM, IPDO2007@YAHOO.COM

All accepted two-page abstracts will be published in a Book of Abstracts provided to all participants during IPDO-2007.

IPDO-2007 Web Page: <http://ipdo.freeshell.org/ipdo2007/index.htm>

For information contact: George S. Dulikravich; tel. +1 (305) 348-7016; E-mail: dulikrav@fiu.edu

5.6 IPDO-2007 SYMPOSIUM AGENDA

The ipdo-2007 Symposium lasted three days with two keynote lectures each day. The Symposium involved two parallel sessions every morning and afternoon. Each session started with one 50 minute invited presentation followed by 6-8 contributed papers each taking 20 minutes. This means that there were a total of 6 keynote lectures and 93 contributed papers totaling 99 papers presented at IPDO-2007.

Finally, there was a round-table discussion involving the entire audience of the IPDO-2007 Symposium that attempted to summarize the entire meeting and bring forward a consensus list of recommendations concerning the most promising future directions in research that involves the three areas covered by the IPDO-2007. In addition, the IPDO-2007 participants were informed by the organizers that they are all invited to join in the efforts to form an international society of professionals working in these three areas of research.

5.7 KEYNOTE LECTURES

Keynote Lecture 1 (08:40-09:30, April 16, 2007 – Room 1):

RECENT ADVANCES IN INFERENTIAL SOLUTIONS TO INVERSE PROBLEMS

MULTI-OBJECTIVE MDO SOLUTION STRATEGY FOR MULTIDISCIPLINARY DESIGN USING modeFRONTIER

FLUID FLOW IN HYDROCYCLONES OPTIMIZED THROUGH MULTI-OBJECTIVE GENETIC ALGORITHMS

USING OF THE IOSO NM SOFTWARE FOR COMPLEX OPTIMIZATION PROBLEMS

CREATING WAVE-FOCUSING MATERIALS

VARIABLE SURFACES FOR AEROSPACE DESIGN AND OPTIMIZATION

Keynote Lecture 2 (14:00-14:40, April 16, 2007 – Room 1):

Keynote Lecture 3 (08:40-09:30, April 17, 2007 – Room 1):

Keynote Lecture 4 (14:00-14:40, April 17, 2007 - Room 1):

Keynote Lecture 5 (08:40-09:30, April 18, 2007 – Room 1):

Keynote Lecture 6 (14:00-14:40, April 18, 2007 – Room 1):

Table 3. IPDO-2007 SYMPOSIUM PROGRAM

	April 15, 2007 Sunday	April 16, 2007 Monday	April 17, 2007 Tuesday	April 18, 2007 Wednesday
7:45 – 8:40		Atlantis Room - Breakfast	Atlantis Room - Breakfast	Atlantis Room - Breakfast
08:20-08:40		Opening of the IPDO		
08:40-09:30		Keynote Lecture 1 <i>Colin Fox -151</i>	Keynote Lecture 3 <i>Nirupam Chakraborti -141</i>	Keynote Lecture 5 <i>Alexander Ramm - 140</i>
		Atlantis Room Alifanov	Tiffany I Room Lesnic	Atlantis Room Kassab
09:30– 09:50		130	004	117
09:50– 10:10		062	011	100
10:10– 10:30		061	012	066
10:30– 10:50		Food/Drinks Break	Food/Drinks Break	Food/Drinks Break
		Food/Drinks Break	Food/Drinks Break	Food/Drinks Break
		Food/Drinks Break	Food/Drinks Break	Food/Drinks Break
		Food/Drinks Break	Food/Drinks Break	Food/Drinks Break

10:50–11:10		132	024	108	092	042	056
11:10–11:30		003	025	127	067	068	060
11:30–11:50		020	128	010	075	116	043
11:50–12:10		041	129	095	078	047	069
12:10–13:30		Lunch Tiffany II	Lunch Tiffany II	Lunch Tiffany II	Lunch Tiffany II	Lunch Tiffany II	Lunch Tiffany II
		Atlantis Room		Atlantis Room		Atlantis Room	
13:30–14:20	Mezzanine area in the Newport Beachside Hotel, 16701 Collins Av. Miami Beach, FL <u>Registration:</u> Sunday 13:30-19:00 cash or bank certified checks (no credit cards) M-W 8:00-4:30	Keynote Lecture 2 <i>Sumeet Parashar - 149</i>		Keynote Lecture 4 <i>Igor Egorov- 109</i>		Keynote Lecture 6 <i>Helmut Sobieczky – 086</i>	
		Atlantis Colaço	Tiffany I Bagtzoglou	Atlantis Michopoulos	Tiffany I Woodbury	Atlantis Kanevce	Tiffany I Dennis
14:20–14:40		150	144	077	098	107	031
14:40–15:00		101	145	085	097	099	088
15:00–15:20		112	091	104	122	063	044
15:20–15:40		090	081	013	083	120	072
15:40–16:00		006	093	008	148	131	137
16:00–16:20		Food/Drinks Break	Food/Drinks Break	Food/Drinks Break	Food/Drinks Break		
16:20–16:40		105	110	049	146		
16:40–17:00		106	111	050	009		
17:00–17:20	17:00–19:00 Reception party (food and drinks in the mezzanine area)	143	139	058	035		
17:20–17:40		126	028	054	039		
17:40–18:00		087	021	133			
18:00–18:20		073	138				

5.8 PLANS FOR COOPERATIVE ACTIVITIES EMERGING FROM THE IPDO-2007

The main objective of the IPDO-2007 Symposium was to bring together researchers from different world regions, dealing with different inverse problems, design concepts and evolutionary multi-disciplinary optimization strategies, for the presentation of their most recent research results and for the technical discussion of their findings. Traditionally, it has been the heat and mass transfer community that has developed some of the most practical methodologies for solving the pertinent inverse problems in diverse applications. IPDO-2007 was clearly successful in bringing together an extremely diverse audience that included inverse problems experts, multi-objective constrained optimization experts and a community dealing with the automatic robust design theories. The fields of applications were equally diverse ranging from biomedicine, material science, materials processing, algorithm developments, solid mechanics, fluid mechanics, electromagnetism, aerospace, structural dynamics, heat transfer, non-destructive evaluations, etc.

At the IPDO-2007 Symposium, an announcement was made by the organizing committee that a new international society for inverse problems is currently been formed and that all IPDO participants are invited to become members once the official announcement is disseminated via Internet. This new society will bring together applied mathematicians, engineers, physicists, chemists, etc. that are interested in developing and utilizing methods and algorithms applicable to the solution of multi-disciplinary inverse problems, design and optimization.

6. Listing of all publications and technical reports supported under this grant or contract

6.1 PUBLICATIONS AND DISSEMINATION OF RESULTS

Printed Proceedings: Extended abstracts (two pages maximum) of all papers submitted for presentation at the IPDO-2007 Symposium (including the 6 keynote lectures) were refereed by a minimum of two anonymous reviewers. A book of abstracts and a CD-ROM containing all accepted papers were given to conference participants on site.

All accepted papers were published in two soft-bound volumes of IPDO-2007 Proceedings and mailed to the conference participants within three months after the symposium was finished. Each of the two volumes of the IPDO-2007 Proceedings had approximately 400 pages.

A CD with .pdf files of all papers was also mailed to all participants. It is added to this report.

Dulikravich, G. S., Colaco, M. J., Orlande, H. R. B. and Tanaka, M. (editors):

Inverse Problems, Design and Optimization (IPDO-2007) Vol. I, ISBN: 978-1-59916-279-9,

Florida International University, Miami, FL, June 2007.

Dulikravich, G. S., Colaco, M. J., Orlande, H. R. B. and Tanaka, M. (editors):

Inverse Problems, Design and Optimization (IPDO-2007) Vol. II, ISBN: 978-1-59916-280-5,

Florida International University, Miami, FL, June 2007.

Internet Dissemination: All papers presented at the IPDO-2007 were also posted on the IPDO-2007 website <http://www.ipdos.org/ipdo2007/> and made available to all of those that registered and/or attended IPDO-2007.

Journal Publication: Each author submitting a paper for presentation at the IPDO Symposium had an option to request that his/her paper, if addressing the general field of inverse problems, be reviewed and considered for a possible publication in the international journal *Inverse Problems in Science and Engineering* (IPSE) published by Taylor & Francis. Consequently, 58 of the 99 papers that were presented at IPDO-2007 were fully reviewed by three reviewers each. Eleven papers were rejected and 48 full extended reviewed papers were accepted for publication in 6 special issues of the international journal *Inverse Problems in Science and Engineering*. All issues are to appear in IPSE in 2008.

Table 4. IPDO-2007 PAPERS: CODE NUMBERS, TITLES AND PAGES IN THE PROCEEDINGS

PAPER	TITLE	PAGE
003	INVERSE ANALYSIS APPLIED FOR DETERMINATION OF STRAIN – STRESS CURVES FOR STEEL DEFORMED IN SEMI-SOLID STATE	001
004	DETERMINATION OF THE LEADING COEFFICIENT IN FOURTH-ORDER STURM-LIOUVILLE OPERATOR FROM BOUNDARY MEASUREMENTS	009
006	DYNAMIC OBSERVERS BASED ON GREEN FUNCTIONS APPLIED TO 3D INVERSE THERMAL MODELS	015
008	PROJECTED GRADIENT METHODS FOR SYNCHROTRON RADIATION SPECTRA DISTRIBUTION FUNCTION RECONSTRUCTION	023
009	A NOVEL 3D MEASUREMENT SCHEME WITH ADAPTIVE FUZZY NETWORK MODEL RECONSTRUCTION	029
010	DETERMINATION OF DYNAMICAL LOAD DISTRIBUTIONS APPLIED TO MINDLIN PLATES BY PSEUDOSPECTRAL METHOD	037
011	STABLE NUMERICAL EVALUATION OF GRÜNWALD-LETNIKOV FRACTIONAL DERIVATIVES	044
012	FRACTIONAL IHCP WITH HALF TIME GRÜNWALD-LETNIKOV DERIVATIVES	049
013	ABOUT THE OPTIMUM DESIGN OF AN AIRCRAFT PRESSURE BULKHEAD BY USING MULTI-FIDELITY AND LIFECYCLE ALGORITHM	055
015	ESTIMATION OF THERMAL RESISTANCE DURING SURFACING BY WEDDING – SENSITIVITY ANALYSIS	063
017	OPTIMUM THERMAL MODES IDENTIFICATION OF POST-IMPLANTATION ACTIVATION ANNEALING OF SEMICONDUCTOR MATERIAL	070
020	QUANTITATIVE MILLIMETRE-WAVE IMAGING VIA THE GLOBALLY CONVERGENT CONVEXIFICATION ALGORITHM	078
021	ASPECTS OF APPROXIMATE OPTIMISATION: OVERCOMING THE CURSE OF DIMENSIONALITY AND DESIGN OF EXPERIMENTS	083
023	INVERSE PROBLEM OF THE MEASUREMENTS THEORY	091
024	ROTATING PROJECTION ALGORITHM OF IMAGE RECONSTRUCTION AND APPLICATION FOR ROENTGEN TOMOGRAPHY	096
025	GENERAL RAY METHOD FOR SOLUTION OF DIRICHLET BOUNDARY VALUE PROBLEMS FOR POISSON EQUATION IN ARBITRARY SIMPLE CONNECTED STAR DOMAINS	101
026	HEAT-DISSIPATING CONTROL OF ELECTRONIC DEVICES BY USING A COMBINATION OF LINEAR QUADRATIC GAUSSIAN AND ADAPTIVE INPUT ESTIMATION APPROACHES	106
028	APPLICATION OF THE INVERSE ANALYSIS FOR BOUNDARY CONDITION RETRIEVAL	114
031	SHAPE OPTIMIZATION OF 3D VISCOUS FLOW FIELDS	122
035	A NOVEL ADAPTIVE LASER SCANNING SENSOR FOR REVERSE ENGINEERING	129
039	A NOVEL STRUCTURED LIGHT VISUAL SENSOR WITH ADAPTIVE GAUGE LASER HEAD	136
041	INVERSE ANALYSIS OF CONDUCTION IN HOLLOW CYLINDERS WITH ASYMMETRIC SOURCE DISTRIBUTIONS	144
042	SOLUTION FOR AN INVERSE PROBLEM IN SCATTERING THEORY	152
043	DIGITAL IMAGE INVERSE FILTERING FOR IMPROVING VISUAL ACUITY FOR COMPUTER USERS WITH VISUAL ABERRATIONS	159
044	AN INVERSE DESIGN METHOD FOR VISCOUS FLOW IN TURBOMACHINERY BLADING USING A WALL VIRTUAL MOVEMENT	166
047	A SIMPLE METHOD FOR TOMOGRAPHY RECONSTRUCTION BASED ON A DISCRETE VERSION OF THE TOPOLOGICAL GRADIENT	174
049	CAVITY DETECTION IN BIOMECHANICS BY AN INVERSE EVOLUTIONARY POINT LOAD BEM TECHNIQUE	182
050	AN AUTOMATED APPROACH TO MULTIOBJECTIVE SHAPE OPTIMIZATION FOR ENGINEERING DESIGN PROBLEMS	190
052	TOPOLOGICAL SENSITIVITY ANALYSIS FOR SOURCE PERTURBATION IN TRANSIENT PROBLEMS	198
053	FIRST AND SECOND ORDER TOPOLOGICAL SENSITIVITY ANALYSIS FOR INCLUSIONS	208
054	THE INVERSE COEFFICIENT IDENTIFICATION PROBLEM IN BIO-HEAT TRANSIENT FLOW EQUATION	214
056	INVERSE METHOD FOR THE DETECTION OF VOIDS IN DRILLED-SHAFT CONCRETE PILES FROM LONGITUDINAL TEMPERATURE SCANS	222
057	NUMERICAL SOLUTION OF THE TRUNCATED STIELTJES MOMENT PROBLEM	228
058	NOISE FILTRATION IN FLUORESCENCE-ENHANCED OPTICAL TOMOGRAPHY	236
060	DUMMY PATTERN DESIGN FOR MINIMIZING PWB WARPAGE	242
061	SOFT-COMPUTING METHODS IN INVERSE ANALYSIS. II: MICROPLANE MODEL PARAMETERS IDENTIFICATION	245
062	SOFT-COMPUTING METHODS IN INVERSE ANALYSIS. I: A REVIEW	253
063	IDENTIFICATION OF THE HEAT FLUXES AND THERMAL RESISTANCE ON THE INGOT-MOULD SURFACE IN CONTINUOUS CASTING OF METALS	259

066	ESTIMATING DETERMINISTIC PARAMETERS BY BAYESIAN INFERENCE WITH EMPHASIS ON ESTIMATING THE UNCERTAINTY OF THE PARAMETERS	266
067	OPTIMIZATION OF CATALYTIC NETWORKS WITH CONTROLLED POROSITY	273
068	ESTIMATION OF BENDING STIFFNESS AND DAMPING OF TRANSMISSION LINE CONDUCTORS	280
069	A NEW INVERSE PROCESSING APPROACH TO THE MODELING OF HEAD-RELATED TRANSFER FUNCTIONS FOR AUDIO SPATIALIZATION	287
071	POD-RBF NETWORK APPROXIMATION FOR INVERSE PROBLEM SOLUTIONS	295
072	INVERSE AERODYNAMIC DESIGN APPLICATIONS USING THE MGM HYBRID FORMULATION	301
073	FINITE ELEMENT MODEL UPDATING OF A SUSPENSION BRIDGE USING ANSYS SOFTWARE	309
075	SHAPE OPTIMIZATION OF BYPASS GRAFTS END-TO-SIDE DISTAL ANASTOMOSES	317
077	TOWARDS HIERACHICAL DESIGN OPTIMIZATION FOR SIMULTANEOUS MATERIAL CHARACTERIZATION AND CONTROL OF EXPERIMENTS	325
078	AN ADAPTIVE SOLUTION OF LINEAR INVERSE PROBLEMS	333
081	DETERMINING CHLOROPHYLL CONCENTRATION IN OFFSHORE SEA WATER FROM MULTI-SPECTRAL RADIANCES BY USING SECOND DEVIRATIVE CRITERION AND ANT COLONY META-HEURISTIC	341
082	HARDWARE IMPLEMENTATION FOR THE ATMOSPHERIC TEMPERATURE RETRIEVAL FROM SATELLITE DATA	349
083	ESTIMATING ATMOSPHERIC AREA SOURCE STRENGTH THROUGH PARTICLE SWARM OPTIMIZATION	354
084	VISCO-PIEZO-ELASTIC PARAMETER ESTIMATION IN LAMINATED PLATE STRUCTURES	360
085	MULTIOBJECTIVE NONLINEAR SHAPE OPTIMIZATION OF STENT BASED ON EVOLUTION PRINCIPLES	368
086	VARIABLE SURFACES FOR AEROSPACE DESIGN AND OPTIMIZATION	375
087	A NONSTATIONARY INVERSION APPROACH FOR IMAGING FLUID FLOW IN UNSATURATED POROUS MEDIUM	382
088	ON THE FORMULATION OF AN INVERSE PROBLEM AND AN OPTIMIZATION METHOD FOR TURBOMACHINERY DESIGN	389
090	AN EFICIENT ALGORITHM FOR THE DETERMINATION OF MULTIPLE REGULARIZATION PARAMETERS	395
091	ESTIMATION OF SIZE DISTRIBUTION IN CONCENTRATED PARTICLE SYSTEMS FROM LIGHT SCATTERING MEASUREMENTS	403
092	INVERSE DETERMINATION OF KINETIC RATE CONSTANTS FOR TRANSESTERIFICATION OF VEGETABLE OILS USING A MICROMEASUREATOR	409
093	SINGULAR VALUE DECOMPOSITION OF INFRARED IMAGES SEQUENCES. APPLICATION TO THERMAL DIFFUSIVITY PROFILE ESTIMATION AFTER A "FLASH" EXCITATION	416
094	APPLICATION OF THE EXTENDED PHASE TRAJECTORIES TO IDENTIFICATION OF CHAOTIC SYSTEM	424
095	SOLUTION OF AN INVERSE ADSORPTION PROBLEM WITH AN EPIDEMIC GENETIC ALGORITHM AND THE GENERALIZED EXTREMAL OPTIMIZATION ALGORITHM	430
097	ASSESSMENT OF DISPERSION MECHANISMS IN RIVERS BY MEANS OF AN INVERSE PROBLEM APPROACH	438
098	A HYBRID APPROACH WITH ARTIFICIAL NEURAL NETWORKS, LEVENBERG-MARQUARDT AND SIMULATED ANNEALING METHODS FOR THE SOLUTION OF GAS-LIQUID ADSORPTION INVERSE PROBLEMS	445
099	FORMULATION AND SOLUTION OF POROUS MEDIA INVERSE DRYING PROBLEM USING A COMBINATION OF STOCHASTIC AND DETERMINISTIC METHODS	453
100	ESTIMATION OF RADIATIVE PROPERTIES WITH THE PARTICLE COLLISION ALGORITHM	461
101	ESTIMATION OF THE HEAT TRANSFER COEFFICIENT BY MEANS OF THE METHOD OF FUNDAMENTAL SOLUTIONS	469
103	APPLICATION OF A GEO + SA HYBRID OPTIMIZATION ALGORITHM TO THE SOLUTION OF AN INVERSE RADIATIVE TRANSFER PROBLEM	477
104	APPLICATION OF HYBRID OPTIMIZATION ALGORITHMS TO A REFERENCE COGENERATION SYSTEM	485
105	FEATURES OF INVERSE METHODS FOR DETERMINATION OF HEAT TRANSFER IN POROUS MATERIALS AT HIGH HEATING VELOCITY	493
106	EXPERIMENTAL DETERMINATION OF THERMAL CONDUCTIVITY AND DIFFUSIVITY USING PARTIALLY HEATED SURFACE METHOD WHITOUT HEAT FLUX TRANSDUCER	501
107	INVERSE APPROACHES TO DRYING OF SLICED FOODS	509
108	INVERSE APPROACHES IN IMPROVEMENT OF AIR POLLUTION PLUME DISPERSION MODELS FOR REGULATORY APPLICATIONS	517
109	USING OF THE IOSO NM SOFTWARE FOR COMPLEX OPTIMIZATION PROBLEMS	525
110	SOLVING INVERSE PROBLEMS FOR DES BY COLLAGE METHOD AND APPLICATIONS TO VARIATIONAL OPTIMIZATION	533
111	SOLVING INVERSE PROBLEMS FOR RANDOM EQUATIONS AND APPLICATIONS	540
112	SOLVING AN INVERSE SOURCE PROBLEM WITH THE METHOD OF FUNDAMENTAL SOLUTIONS AND A HIGHER ORDER DIRECT PROBLEM	548
115	NOVEL INSTRUMENTATION CALCULATION METHOD TO DETERMINE THE PHASE-SHIFT OF ULTRASOUND WAVES FOR NON-DESTRUCTIVE MATERIAL CHARACTERIZATION	556
116	CYLINDRICAL COORDINATES IN THERMOACOUSTIC TOMOGRAPHY	564
117	STRUCTURAL DAMAGE ASSESSMENT USING ARTIFICIAL NEURAL NETWORKS	570
118	ESTIMATION OF OPTICAL THICKNESS AND SINGLE SCATTERING ALBEDO WITH ARTIFICIAL NEURAL NETWORKS AND A MONTE CARLO METHOD	576
119	THE USE OF DECISION AID SYSTEMS FOR STRUCTURING REQUIREMENT ENGINEERING SYSTEMATICS	584
120	ON THE IDENTIFICATION OF STAR SHAPE SOURCES FROM BOUNDARY MEASUREMENTS USING A RECIPROCITY FUNCTIONAL	592

122	A TWO LEVEL OPTIMIZATION APPROACH FOR LONG TERM PLANNING IN A LARGE AIR TRANSPORTATION NETWORK	600
126	USE OF EVOLUTIONARY ALGORITHMS TO DETERMINE TOOL HEAT FLUXES IN A MACHINING OPERATION	607
127	OPTIMIZATION OF SOLUTE TRANSFER IN POROUS MEDIA USING HOMOGENIZATION	613
128	REFINED IDENTIFICATION OF DAMPING IN STEEL BEAMS BY INVERSE ANALYSIS	620
129	EXPERIMENTAL IDENTIFICATION OF DYNAMIC PARAMETERS FOR STEEL BEAMS BY INVERSE ANALYSIS	628
130	PARAMETRIC IDENTIFICATION OF A HEAT CONDUCTION MODEL FOR ANISOTROPIC MATERIALS	637
131	RETRIEVAL OF HUMIDITY PROFILES WITH RADIO OCCULTATION MEASUREMENTS USING AN ARTIFICIAL NEURAL NETWORK	643
132	FUZZY ANT COLONY OPTIMIZATION FOR ESTIMATING CHLOROPHYLL CONCENTRATION PROFILE IN OFFSHORE SEA WATER	651
133	METHOD AND RESULTS OF INVESTIGATIONS OF THERMOPHYSICAL PROPERTIES OF CARBON-POLYMER COMPOSITES WITH FULL-SCALE SAMPLES OF BEAM SPACE STRUCTURES	658
135	OPTIMAL SHAPES OF A NOISE BARRIER BY MEANS OF BOUNDARY ELEMENT METHOD AND GENETIC ALGORITHM	662
137	REDUCED MODELLING THROUGH IDENTIFICATION ON 2-D INCOMPRESSIBLE LAMINAR FLOWS	666
138	EFFORTLESS APPLICATION OF THE METHOD OF LINES FOR THE INVERSE ESTIMATION OF SURFACE HEATING WAVEFORMS	673
139	HIGH PERFORMANCE SAILPLANE DESIGN STRATEGY USING INVERSE DESIGN AND OPTIMIZATION TECHNIQUES	680
140	CREATING WAVE-FOCUSING MATERIALS	688
141	FLUID FLOW IN HYDROCYCLONES OPTIMIZED THROUGH MULTI-OBJECTIVE GENETIC ALGORITHMS	692
143	OPTIMAL EXPERIMENT DESIGN AND THERMO-PHYSICAL CHARACTERISATION OF A PLASTICALLY DEFORMED SOLID	701
144	HYDROLOGIC MODEL CALIBRATION WITH PARTICLE TRACKING AS A GROUNDWATER AGE PROXY	708
145	ENHANCED RADAR CALIBRATION USING PHYSICALLY BASED IMAGE RESTORATION METHODS	715
146	EXTRACTION OF MATERIAL CONSTITUTIVE BEHAVIOR FROM BOUNDARY MEASUREMENTS OF FORCE AND DISPLACEMENTS	723
147	INVERSE CONJUGATE HEAT TRANSFER PROBLEMS: STATEMENTS, CLASSIFICATION, WAYS OF SOLVING	729
148	ON THE USE OF A GLOBAL SEARCH METHOD AND A GRADIENT BASED METHOD FOR THE IDENTIFICATION OF AIRCRAFT LONGITUDINAL STABILITY AND CONTROL DERIVATIVES	735
149	MULTI-OBJECTIVE MDO SOLUTION STRATEGY FOR MULTIDISCIPLINARY DESIGN USING modeFRONTIER	742
150	A COMPARISON OF TWO METHODS FOR FITTING HIGH DIMENSIONAL RESPONSE SURFACES	750
151	RECENT ADVANCES IN INFERENTIAL SOLUTIONS TO INVERSE PROBLEMS	758
152	APPROXIMATION OF THE LIKELIHOOD FUNCTION IN THE BAYESIAN TECHNIQUE FOR THE SOLUTION OF INVERSE PROBLEMS	766

Table 5. IPDO-2007 PAPERS: CODE NUMBERS AND AUTHORS

PAPER	FIRST AUTHOR		SECOND AUTHOR		THIRD AUTHOR		FOURTH AUTHOR		FIFTH AUTHOR	
	FIRST NAME	LAST NAME	FIRST NAME	LAST NAME	FIRST NAME	LAST NAME	FIRST NAME	LAST NAME	FIRST NAME	LAST NAME
003	Miroslaw	Glowacki	Marcin	Hojny						
004	Daniel	Lesnic	Alemdar	Hasanov						
006	Priscila	Sousa	Solidônio	Carvalho	Gilmar	Guimarães				
008	Yanfei	Wang	Yonghua	Du	Tiandou	Hu				
009	Zi	Ma	Huipu	Xu	Aiguo	Li	Ying	Hu	Mitchell	Chen
010	Chenming	Ma								
011	Diego	Murio								
012	Diego	Murio								
013	Felipe	Viana	Valder	Steffen Jr.	Sergio	Butkewitsch	Marcus	Leal		
015	Ireneusz	Szczygiel	Adam	Fic	Andrzej	Sachajdak				
017	Alex	Moultanovsky								
020	Alexander	Timonov	Michael	Klibanov						
021	Sophie	Trichon	Martijn	Bonte	Jean-Philippe	Ponthot	Ton	van den Boogaard		
023	Vladimir	Zalyapin	Helena	Kharitonova	Stepan	Yermakov				
024	Alexander	Grebennikov	J.	Luna	Tomas	Perez	Manuel	Enriquez		
025	Alexander	Grebennikov								
026	Tsung-Chien	Chen	Shou-Jen	Hsu	Pan-Chio	Tuan				
028	Arkadius	Ryfa	Ryszard	Bialecki	Bruno	Facchini	Lorenzo	Tarchi		

	z										
031	Eiji	Katamine	Yuya	Nagatomo	Hideyuki	Azegami					
035	Ji	Zhao	Na	Lin	Zi	Ma	Ying	Hu	Xu	Zhang	
039	Jin	Huang	Ying	Hu	Zi	Ma	Shuanghe	Yu			
041	Samuel	Lambrakos	John	Michopoulos	Harry	Jones	Craig	Boyer			
042	Yaakov	Olshansky	Eli	Turkel							
043	Miguel	Alonso	Armando	Barreto	Malek	Adjouadi					
044	Kasra	Daneshkhan	Wahid	Ghaly							
047	Ignacio	Larrabide	André	Novotny	Raul	Feijóo	R.	Lima			
049	David	Ojeda	Eduardo	Divo	Alain	Kassab	Miguel	Cerrolaza			
050	Salvador	Gerace	Alain	Kassab	Eduardo	Divo					
052	Pablo	Blanco	André	Novotny	Raul	Feijóo					
053	J.	Faria	André	Novotny	Raul	Feijóo	E.	Taroco	C.	Padra	
054	Dumitru	Trucu	Derek	Ingham	Daniel	Lesnic					
056	Stan	Kranc	Austin	Mullins							
057	Gerassimos	Athanassoulis	Panagiotis	Gavriliadis							
058	Banghe	Zhu	Eva	Sevick-Muraca	Margaret	Eppstein	Anuradha	Godavarty			
060	Sun	Kim	Sang-Hyuk	Lee	Kyung-Ha	Kim	Se-Hyung	Han	Yeong	Kim	
061	Anna	Kučerová	Zuzana	Vitingerová	Matěj	Lepš					
062	Matěj	Lepš									
063	Aleksander	Nawrat	Janusz	Skorek	Andrzej	Sachajdak					
066	Ashley	Emery									
067	Andrew	Seagraves	R.	Roy							
068	Daniel	Castello	Carlos	Matt							
069	Kenneth	Faller II	Armando	Barreto	Naphtali	Rishe					
071	Ziemowit	Ostrowski	Ryszard	Bialecki	Adam	Fic	Roman	Weber	Marc	Muster	
072	Ernani	Volpe	Guilherme	Oliveira	Luis	Santos	Marcelo	Hayashi	Marco	Ceze	
073	Renata	Merce	Graciela	Doz	José	Brito	John	Macdonald	Michael	Friswell	
075	Zaher	Zahab	Eduardo	Divo	Alain	Kassab					
077	John	Michopoulos	Tomonari	Furukawa							
078	Kourosh	Modarresi	Gene	Golub							
081	Roberto	Souto	Valéria	Barbosa	Haroldo	Campos Velho	Stephan	Stephany			
082	Haroldo	Campos Velho	José	Silva	Elcio	Shiguemori					
083	Eduardo	Luz	Haroldo	Campos Velho	José	Becceneri	Débora	Robert			
084	Aurelio	Araujo	Cristóvão	Soares	José	Herskovits					
085	William	Annicchiarico	George	Dulikravich							
086	Helmut	Sobieczky	Monika	Hannemann							
087	Anssi	Lehikoinen	Arto	Voutilainen	Jari	Kaipio	Stefan	Finsterle	Mike	Kowalsky	
088	Haysam	Telib	Luca	Zannetti							
090	Kourosh	Modarresi	Gene	Golub							
091	Gloria	Frontini	Fernando	Otero	María	Messineo	Guillermo	Eliçabe			
092	Brian	Dennis	Weiya	Jin	Richard	Timmons					
093	Matthieu	Bamford	Jean	Batsale	Olivier	Fudym					
094	Viktorija	Volkova	Michael	Kazakevitch							
095	Ana	Cuco	Antônio	Silva Neto	Haroldo	Campos Velho	Fabiano	Sousa			
097	Jader	Lugon Junior	Antônio	Silva Neto	Pedro	Rodrigues					

098	Jader	Lugon Junior	Antonio	Silva Neto	César	Santana					
099	Jader	Lugon Junior	Antônio	Silva Neto							
100	Diego	Knupp	Antônio	Silva Neto	Wagner	Sacco					
101	Marcus	Valle	Marcelo	Colaço	Francesco	Scofano Neto					
103	Roberto	Galski	Fabiano	Sousa	Fernando	Ramos	Antônio	Silva Neto			
104	Ricardo	Padilha	Marcelo	Colaço	Manuel	Cruz					
105	Sergey	Reznik	Pavel	Prosuntsov	Andrey	Zuev					
106	Valério	Borges	Priscila	Sousa	Gilmar	Guimarães					
107	Gligor	Kanevce	Ljubica	Kanevce	Vangelce	Mitrevski	George	Dulikravich			
108	Gligor	Kanevce	Ljubica	Kanevce	Igor	Andreevski	George	Dulikravich			
109	Igor	Egorov	Gennadiy	Kretinin	Igor	Leshchenko	Sergey	Kuptsov			
110	H.	Kunze	Davide	La Torre	E.	Vrscay					
111	H.	Kunze	Davide	La Torre	E.	Vrscay					
112	Carlos	Alves	Nuno	Martins	Nilson	Roberty	Marcelo	Colaço	Helcio	Orlande	
115	Sylvie	Breton	Yohann	Redon							
116	Gerhard	Zangerly	Otmar	Scherzery	Marcus	Haltmeier					
117	Fábio	Câmara	Antônio	Silva Neto	Francisco	Soeiro					
118	Ezzat	Chalhoub	Antônio	Silva Neto	Francisco	Soeiro					
119	André	Sena	Leonardo	Ensslin							
120	Nilson	Roberty	Carlos	Alves							
122	Amadou	Handou	Aïcha	Oumarou	Catherine	Mancel	Félix	Mora-Camino			
126	Keith	Woodbury	Suprasanna	Duvvuri	Y.	Chou	Jie	Liu			
127	D.	Bandypadhyay	Andre	Bénard							
128	Hesham	Elshazly	A.	Anwar	M.	Abdel-Mooty					
129	M.	Abdel-Mooty	Hesham	Elshazly	A.	Anwar					
130	O.	Alifanov	V.	Kolesnikov							
131	Rosângela	Cintra	José	Silva	Haroldo	Campos Velho					
132	Adenilson	Carvalho	Roberto	Souto	Haroldo	Campos Velho	José	Becceneri	Stephan	Stephany	
133	Sergey	Reznik	Pavel	Prosuntsov	Vasily	Railyan	Andrey	Shulyakovskiy			
135	Masataka	Tanaka	Youri	Arai	Hisashi	Hayashi					
137	O.	Balima	Y.	Rouizi	Y.	Favennec	D.	Petit			
138	Antonio	Campo	John	Ho							
139	Krzysztof	Kubrynski									
140	Alexander	Ramm									
141	Nirupam	Chakraborti	A.	Shekhar	A.	Singhal	S.	Chakraborty	S.	Chowdhury	
143	Foued	Mzali	F.	Albouchi	S.	Nasrallah	D.	Petit			
144	Amvrossios	Bagtzoglou	Justin	Niedzialek	Fred	Ogden					
145	Amvrossios	Bagtzoglou	Emmanouil	Anagnostou	Justin	Niedzialek	Fred	Ogden			
146	Youssef	Hashash									
147	Yuri	Matsevity	Alex	Moultanovsky	Andrey	Kostikov					
148	Luiz	Góes	Benedito	Maciel	Nei	Brasil Neto	Felipe	Viana	Valder	Steffen Jr.	
149	Sumeet	Parashar	Nader	Fateh							
150	Marcelo	Colaço	George	Dulikravich	Debasis	Sahoo					
151	Colin	Fox									
152	Helcio	Orlande	Marcelo	Colaço	George	Dulikravich					

Table 6. IPDO-2007 AUTHORS AND PAPERS BY COUNTRY

Country	Number of authors/co-authors	Papers published in IPDO-2007
Brazil	3,4,4,3,3,2,5,3,4,3,4,1,4,3,3,2,3, 3,4,3,3,3,3,2,1,3,5,5,1,2,	006,013,047,052,053,068,072,073,081,082, 083,095,097,098,099,100,101,103,104,106, 117,118,119,120,131,132,148,150,152,
United States of America	1,1,1,2,4,3,2,3,2,4,1,1,2,3,3,1,2, 1,2,2,3,1,1,4,2,2,1,3,4,1,1,2,2,1,	011,012,017,020,041,043,050,056,058,066, 067,069,075,077,078,090,092,126,127,138, 140,144,145,146,149,
Poland	2,3,2,3,2,1,	003,015,028,063,071,139,
P.R. China	3,1,1,5,4,	008,009,010,035,039,
Russia	3,3,4,2,4,	023,105,109,133,
Canada	2,2,2,1,	044,110,111,137,
Italy	2,2,1,1,1,	088,122,130,
France	3,2,3,3,1,	093,115,
United Kingdom	1,1,3,2,	004,054,
Japan	2,1,1,3,	031,135,
Portugal	2,2,1,	084,112.
Macedonia	3,3,	107,108,
Czech Republic	3,1,	061,062,
Mexico	4,1,	024,025,
Ukraine	2,2,	094,147,
Egypt	2,2,	128,129,
Venezuela	2,1,	049,085,
Republic of Korea	6,	060,
Argentina	1,4,	091,
India	5	141,
Germany	2,2,	086,
Tunisia	3	143,
Finland	3,	087,
Republic of China	3,	026,
Belgium	2,	021,
Israel	2,	042,
Greece	2	057,
Austria	2,	116,
New Zealand	1,	151,
The Netherlands	2,1,	
Turkey	1,	
Australia	1,	
Denmark	1,	
Spain	1,	

From this table it is evident that IPDO-2007 Symposium was truly international

7. List of all participating scientific personnel showing any advanced degrees earned by them while employed on the project

As per Table 2, it is evident that the entire amount of \$5,000 budgeted in this grant was used strictly for paying stipends for several invited speakers. None of these individuals earned any advanced degrees while funded by this grant.

8. Report of inventions (by title only)

There were no inventions or patents that resulted from this funding of this project.

9. Bibliography

No literature was consulted when preparing this final report except for the two IPDO-2007 proceedings as follows:

Dulikravich, G. S., Colaco, M. J., Orlande, H. R. B. and Tanaka, M. (editors):

Inverse Problems, Design and Optimization (IPDO-2007) Vol. I, ISBN: 978-1-59916-279-9,

Florida International University, Miami, FL, June 2007.

Dulikravich, G. S., Colaco, M. J., Orlande, H. R. B. and Tanaka, M. (editors):

Inverse Problems, Design and Optimization (IPDO-2007) Vol. II, ISBN: 978-1-59916-280-5,

Florida International University, Miami, FL, June 2007.

10. Appendices

10.1 PHOTOS FROM THE IPDO-2007 SYMPOSIUM



Fig. 2 Hotel staff involved with IPDO-2007



Fig. 3 FIU ASME Student Chapter staff



Fig. 4 Opening of IPDO-2007 Symposium



Fig. 5 Technical paper presentations



Fig. 6 IPDO-2007 organizers at the banquet



Fig. 7 IPDO-2007 banquet and awards

Sponsored by:

AFOSR/Numerical Mathematics
(United States Air Force Office of Scientific Research)

ARO/Materials Division
(United States Army Research Office)

Taylor & Francis Publishers
(United Kingdom)

ESTECO – modeFRONTIER
(Italy)

SIGMA Technology – IOSO Technology Center
(Russia)

ASME FIU Student Section
(ASME/Florida International University, U.S.A.)

UFRJ
(Federal University of Rio de Janeiro, Brazil)



9 0 0 0 0

9 781599 162799

Sponsored by:

AFOSR/Numerical Mathematics
(United States Air Force Office of Scientific Research)

ARO/Materials Division
(United States Army Research Office)

Taylor & Francis Publishers
(United Kingdom)

ESTECO – modeFRONTIER
(Italy)

SIGMA Technology – IOSO Technology Center
(Russia)

ASME FIU Student Section
(ASME/Florida International University, U.S.A.)

UFRJ
(Federal University of Rio de Janeiro, Brazil)



9 0 0 0 0

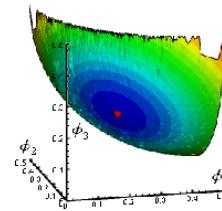
9 781599 162805

Volume 1 INVERSE PROBLEMS, DESIGN AND OPTIMIZATION
IPDO-2007

INVERSE PROBLEMS, DESIGN AND OPTIMIZATION (IPDO-2007)

Volume I

Edited by:
George S. Dulikravich
Marcelo J. Colaco
Helcio R.B. Orlande
Masataka Tanaka

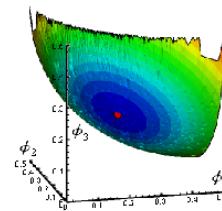


Volume 2 INVERSE PROBLEMS, DESIGN AND OPTIMIZATION
IPDO-2007

INVERSE PROBLEMS, DESIGN AND OPTIMIZATION (IPDO-2007)

Volume II

Edited by:
George S. Dulikravich
Marcelo J. Colaco
Helcio R.B. Orlande
Masataka Tanaka



MASTER COPY: PLEASE KEEP THIS "MEMORANDUM OF TRANSMITTAL" BLANK FOR REPRODUCTION PURPOSES. WHEN REPORTS ARE GENERATED UNDER THE ARO SPONSORSHIP, FORWARD A COMPLETED COPY OF THIS FORM WITH EACH REPORT SHIPMENT TO THE ARO. THIS WILL ASSURE PROPER IDENTIFICATION. NOT TO BE USED FOR INTERIM PROGRESS REPORTS; SEE PAGE 2 FOR INTERIM PROGRESS REPORT INSTRUCTIONS.

MEMORANDUM OF TRANSMITTAL

U.S. Army Research Office
ATTN: AMSRL-RO-BI (TR)
P.O. Box 12211
Research Triangle Park, NC 27709-2211

Reprint (Orig + 2 copies) Technical Report (Orig + 2 copies)

Manuscript (1 copy) Final Progress Report (Orig + 2 copies)

Related Materials, Abstracts, Theses (1 copy)

CONTRACT/GRANT NUMBER: **W911NF-07-1-0230**

REPORT TITLE:
IPDO-2007 - INVERSE PROBLEMS, DESIGN AND OPTIMIZATION SYMPOSIUM

is forwarded for your information.

SUBMITTED FOR PUBLICATION TO (applicable only if report is manuscript):

Sincerely,

Professor George S. Dulikravich, Ph.D., FAAM, FASME
Chairperson, Department of Mechanical and Materials Eng.
Florida International University
College of Engineering and Computing, Room EC 3474
10555 West Flagler Street
Miami, Florida 33174
Tel: (305) 348-7016
FAX: (305) 348-6007
dulikrav@fiu.edu